

## LOFAR MSSS *Multifrequency Snapshot Sky Survey*

### Update

• George Heald (MSSS Project Leader)  
(on behalf of the MSSS Team)  
LOFAR Status Meeting, 1/5/2013

• ASTRON is part of the Netherlands Organisation for Scientific Research (NWO)



**LOFAR**

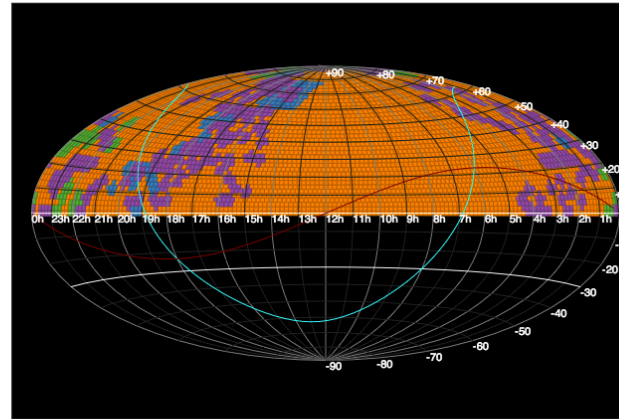
- MSSS-HBA started recently, and is ~25% complete!

LOFAR Observation Database

## MSSS HBA

|                       |               |
|-----------------------|---------------|
| Number of Targets     | 3616          |
| Number of Calibrators | 8             |
| Start Date            | 8 Feb. 2013   |
| Stop Date             | 21 April 2013 |
| Completed Fields      | 862 (23.8%)   |
| Information collected | 22 April 2013 |

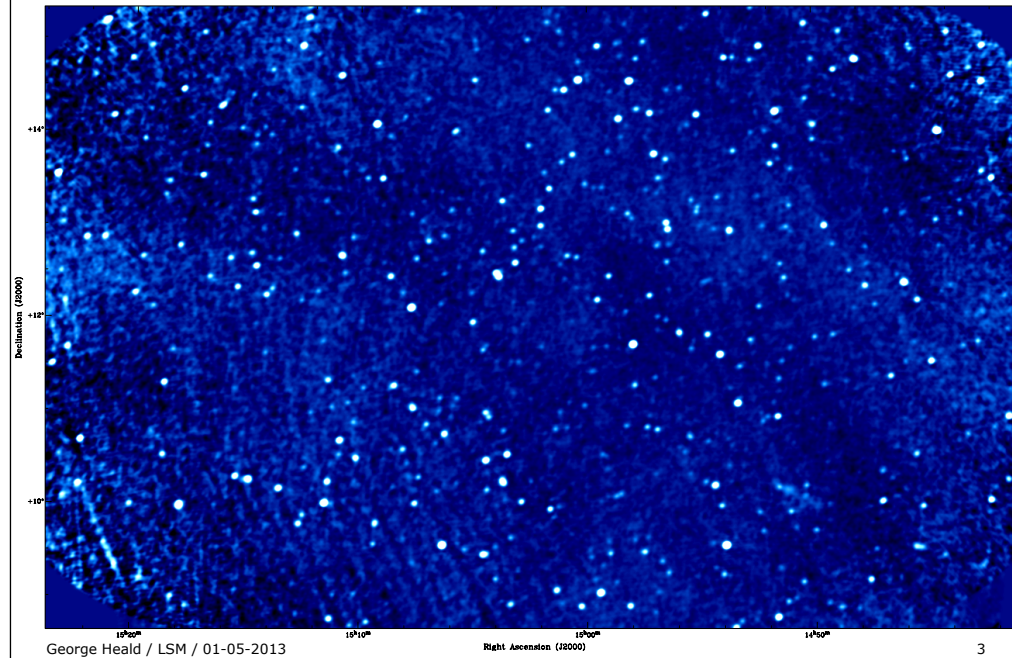
Show me the data »



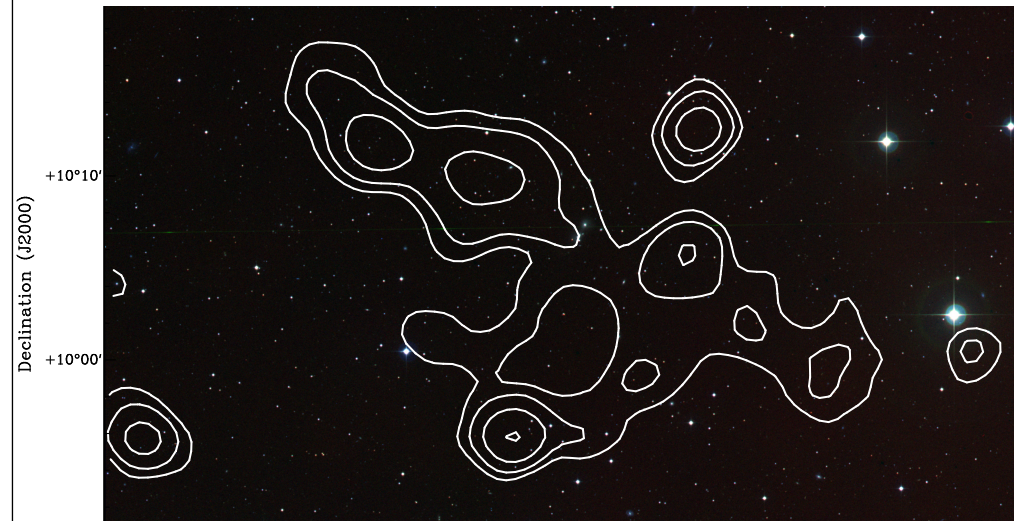
Hammer Projection

Map based on code from [this project](#).

Data available on CEP (3.0%)  
 Data archived (20.9%)  
 Partial data available (3.2%)  
 Data missing (0%)  
 Not yet observed (72.9%)

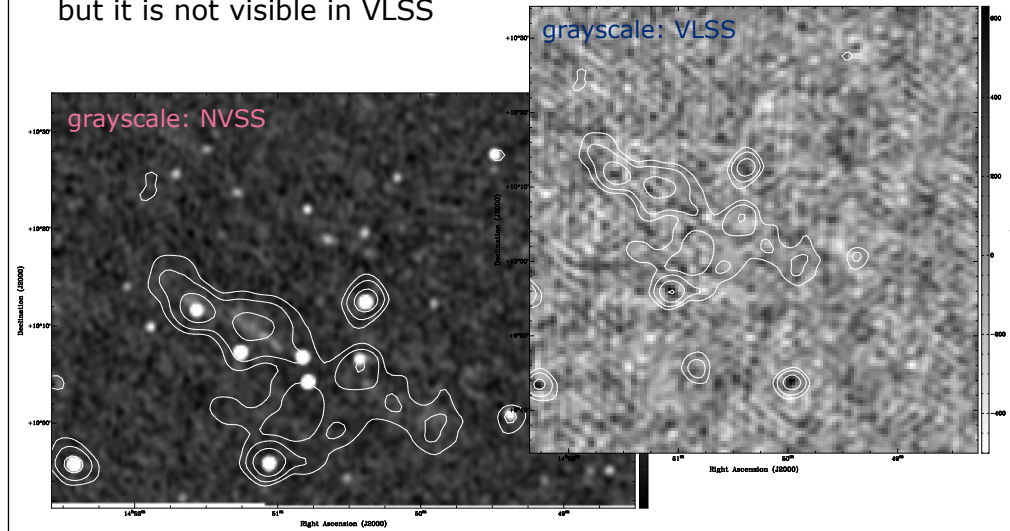


- Extended ( $\sim 36'$ ) source centered on flat-spectrum radio source coincident with one member ( $z=0.054536$ ) of a galaxy triplet

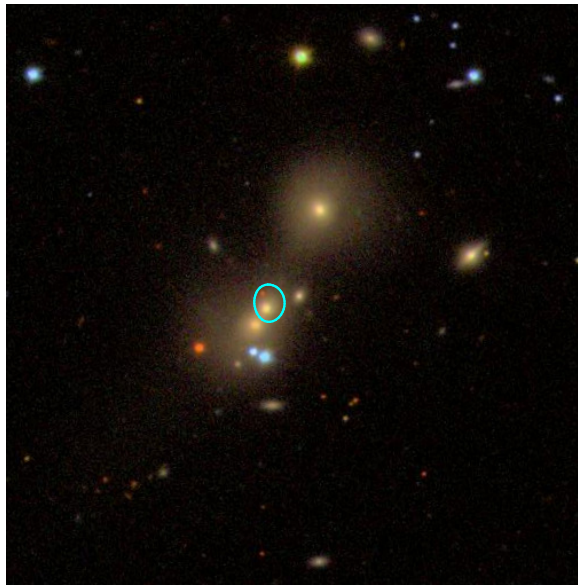


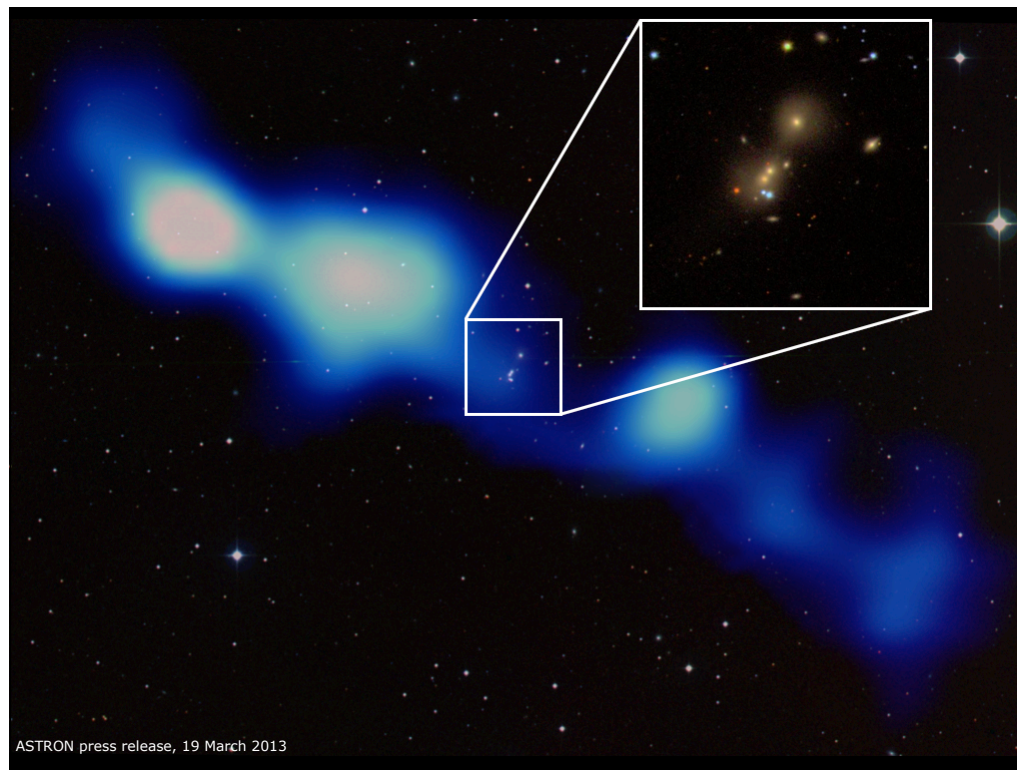


- Faint flux visible in NVSS postage stamp - brightest emission has a steep spectral index between 140 and 1400 MHz ( $\alpha \sim -1.2$ ) but it is not visible in VLSS



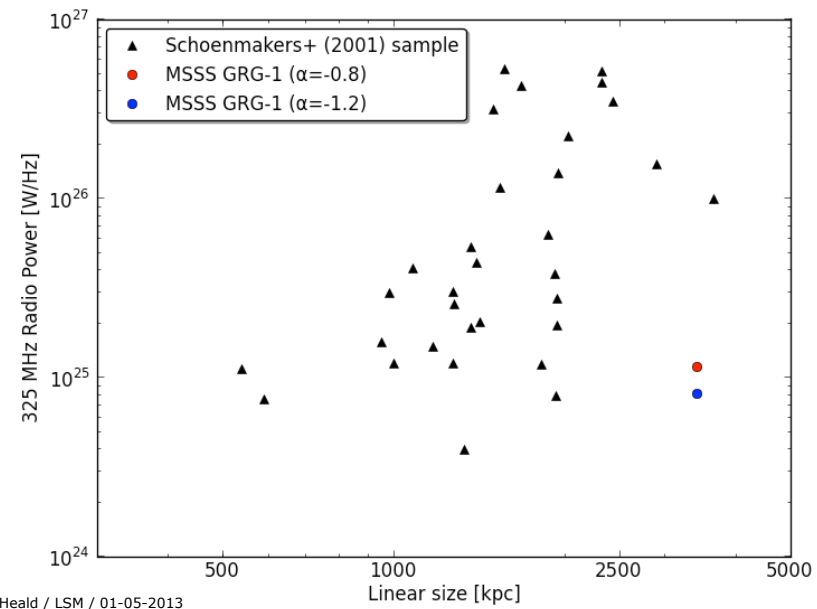
- UGC 9555 (Galaxy triplet);  $z=0.05$  (+NVSS 48 mJy/beam contour)



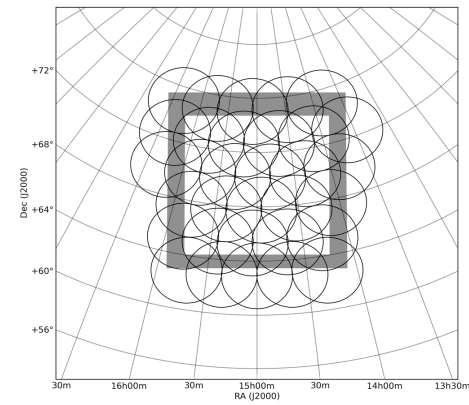
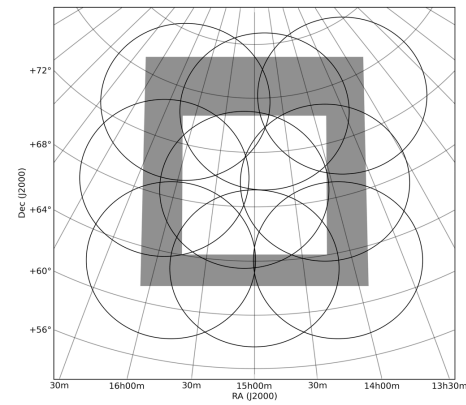


ASTRON press release, 19 March 2013

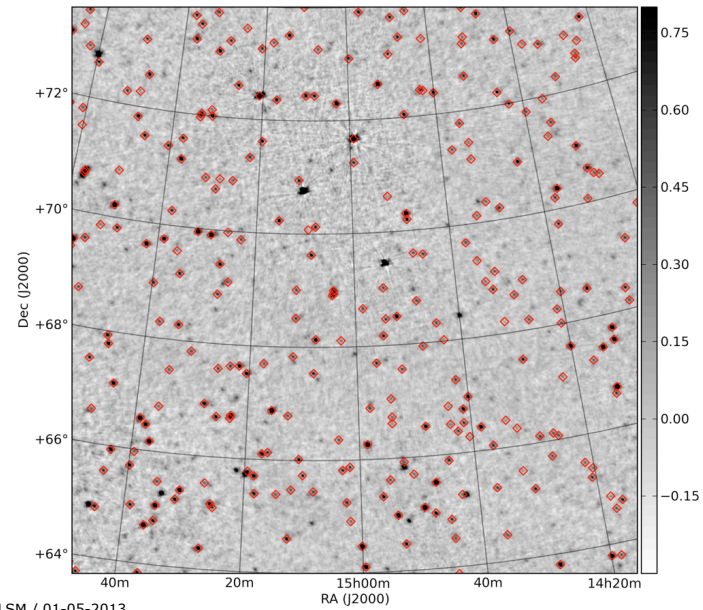
- Identified as a GRG associated with the flat-spectrum NVSS source



- Mosaics formed from 9 LBA fields and 32 HBA fields



- LBA 46 mJy/beam, 2' resolution

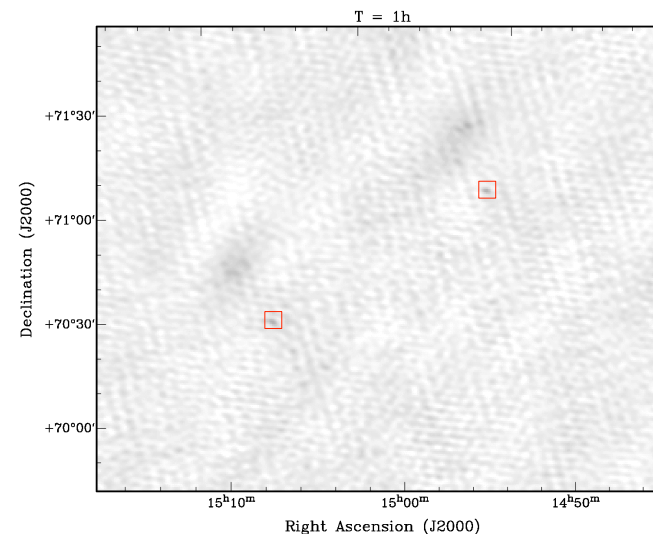


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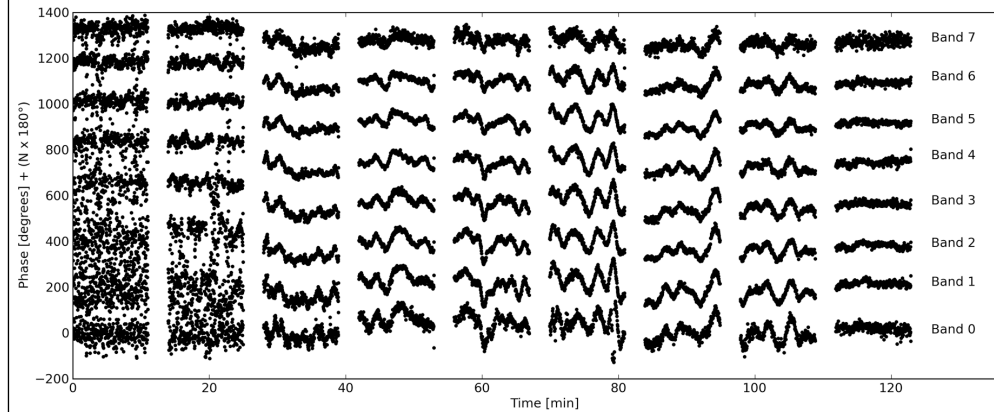
10



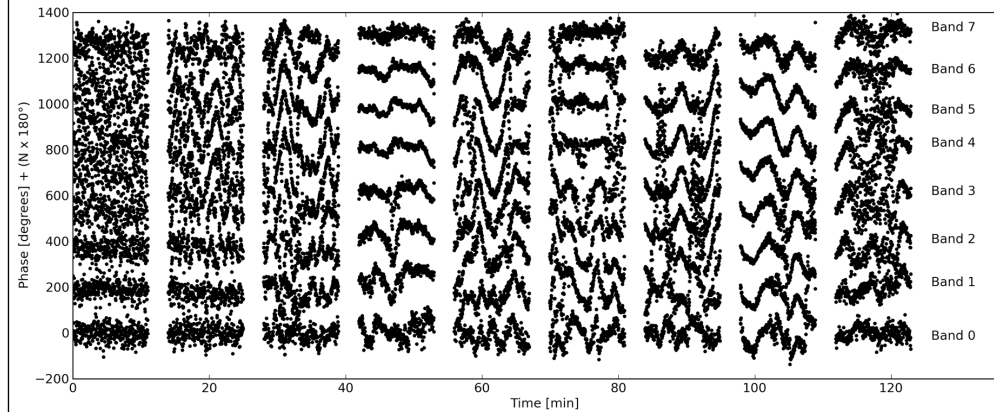
- Sequence of 9 snapshot (11 min each) images @ 31 MHz
- Direction-independent calibration before imaging



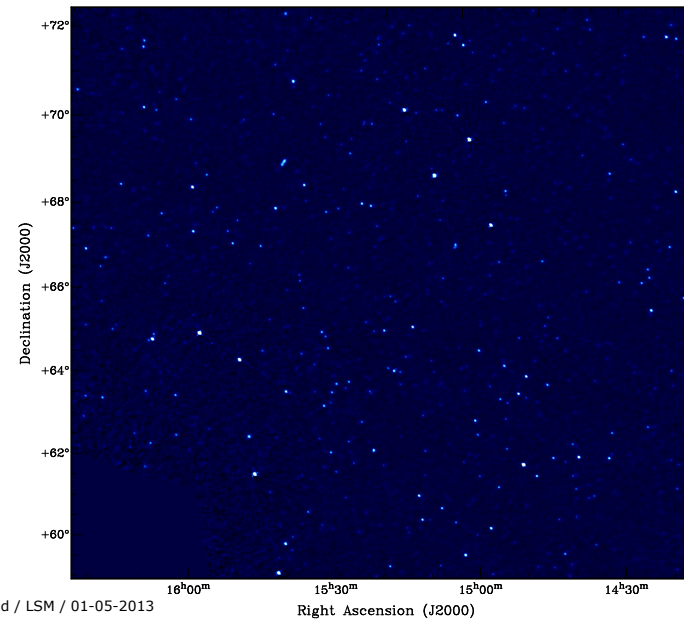
- Clear from phase solutions which snapshots are most strongly affected
- Shown here: CS302LBA (referenced to CS002LBA)



- Clear from phase solutions which snapshots are most strongly affected
- Shown here: RS306LBA (referenced to CS002LBA)



- Using MSSS "peeling" script; 5 sources used for DirectionalGains

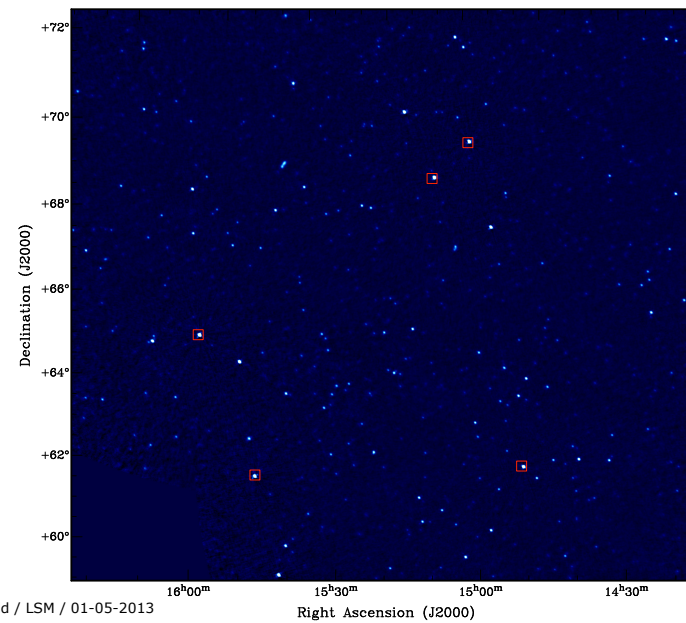


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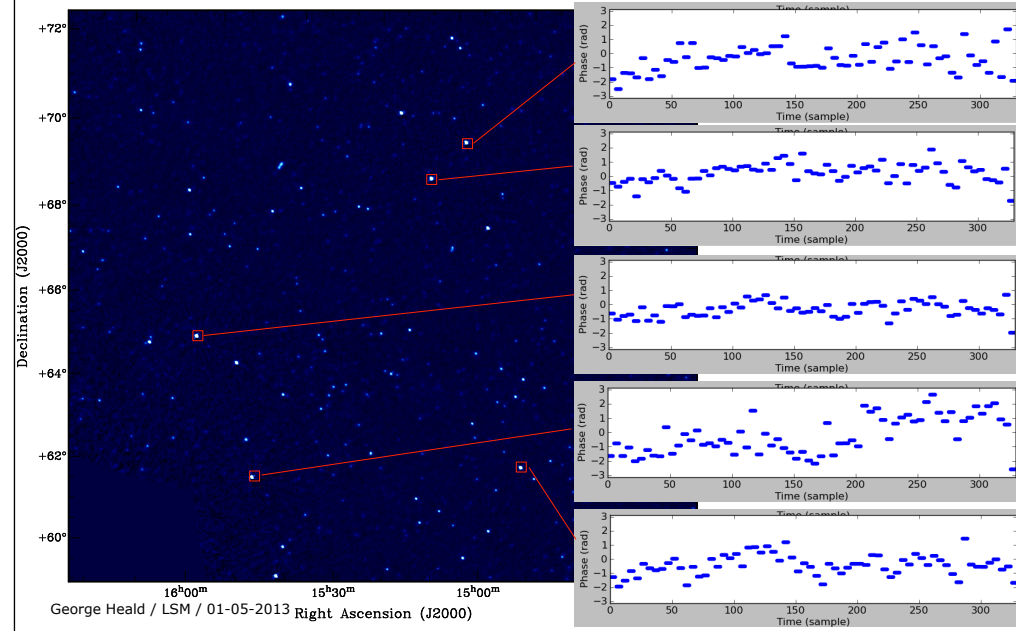
Right Ascension (J2000)

14

- Using MSSS “peeling” script; 5 sources used for DirectionalGains

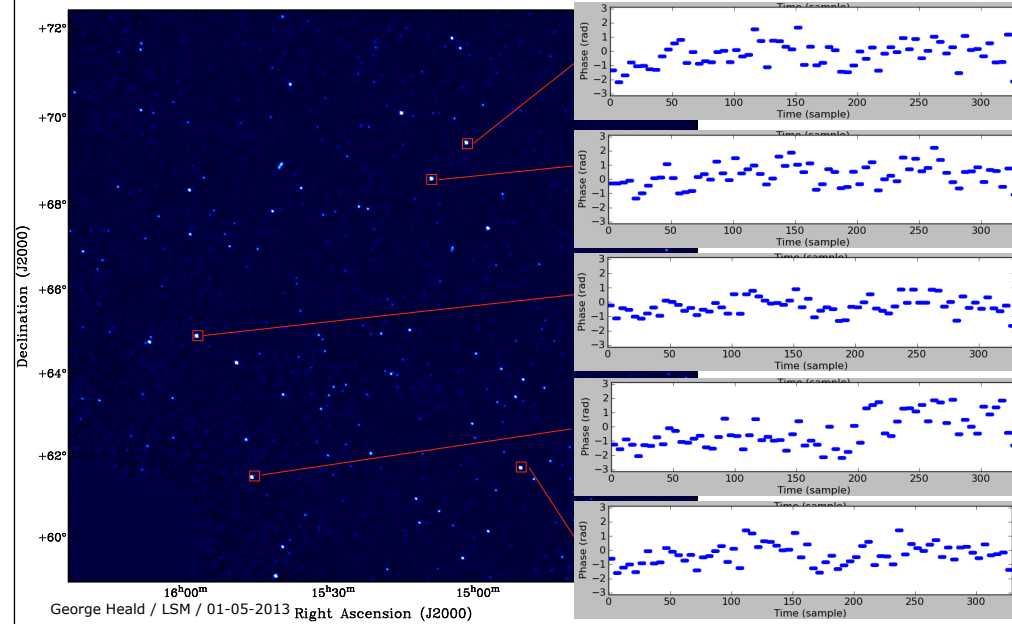


## ■ CS302 DG:0:0 solutions (referenced to CS002)

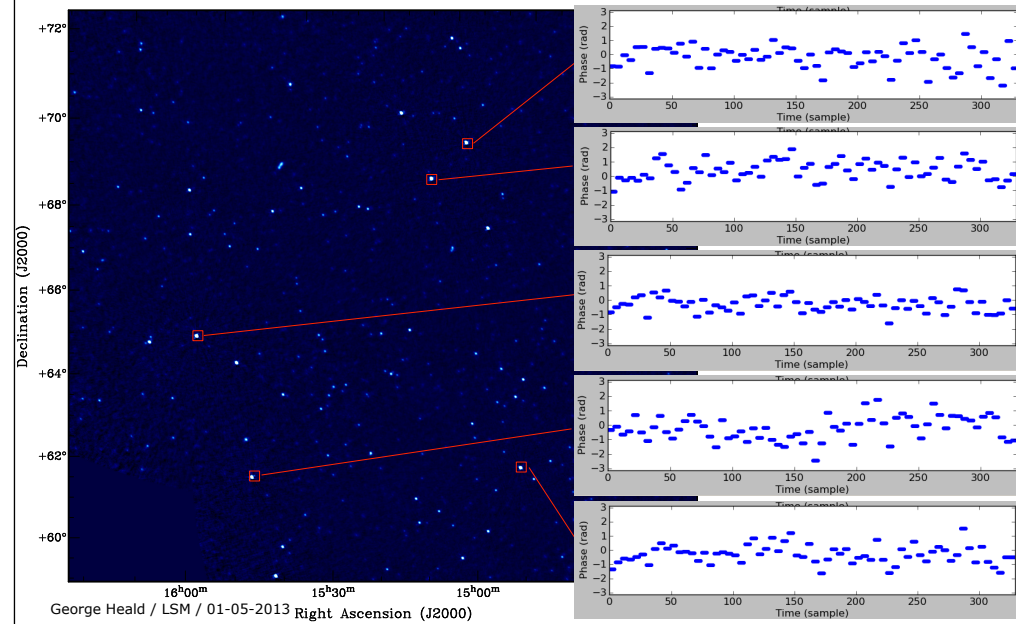




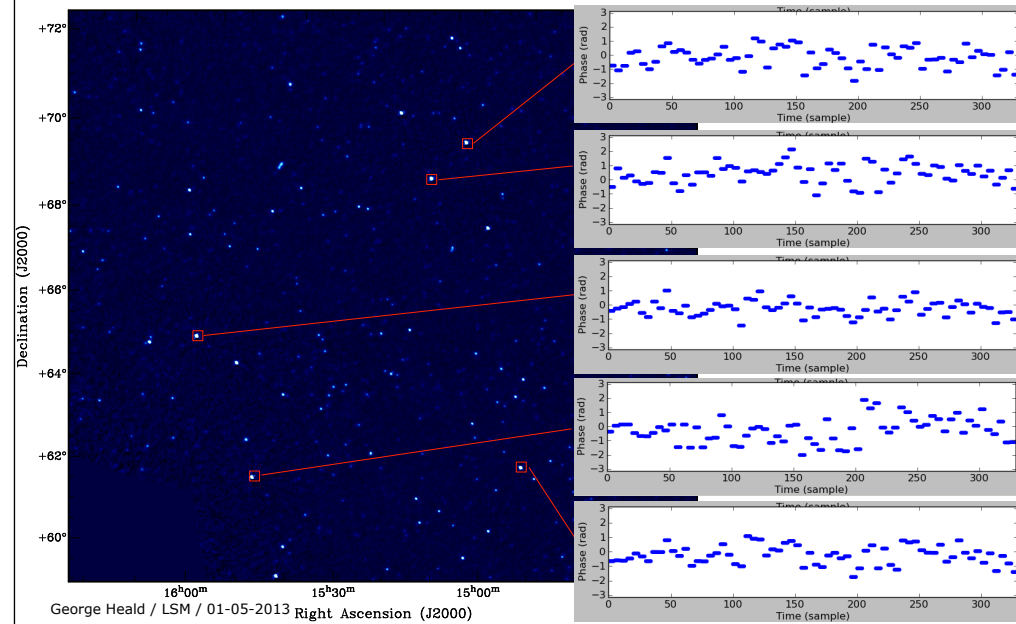
## ■ CS302 DG:1:1 solutions (referenced to CS002)

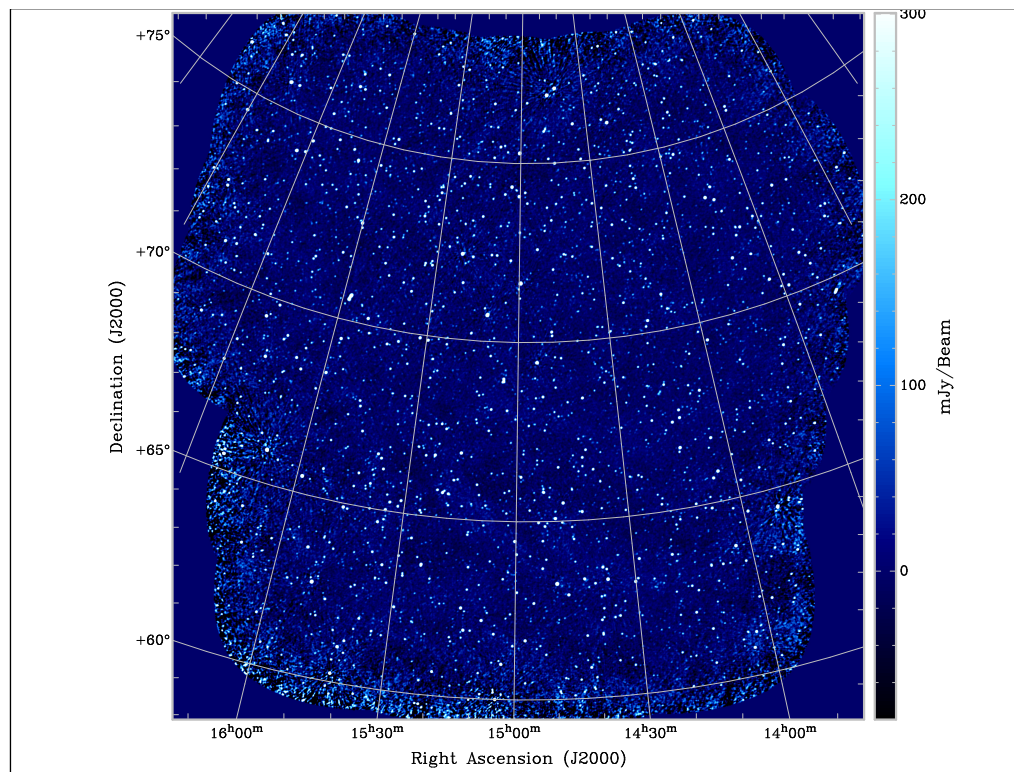


## ■ RS306 DG:0:0 solutions (referenced to CS002)

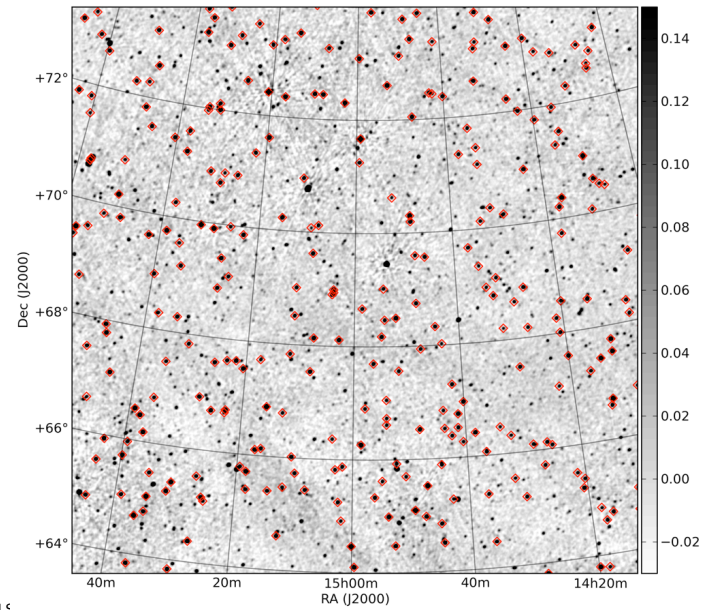


## ■ RS306 DG:1:1 solutions (referenced to CS002)



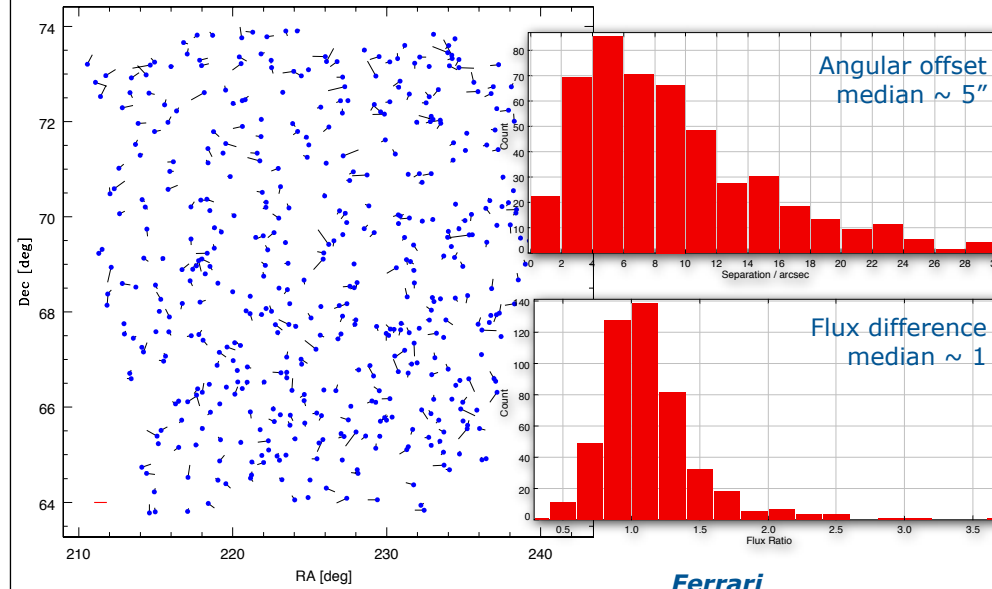


- HBA 11 mJy/beam, 2' resolution



George Heald / LS

- Currently focused on producing MVF mini-catalog for public release





- Release MVF mini-catalog mid 2013 (together with publication of MSSS overview journal article)
- Complete MSSS-HBA observations (projected June 2013)
  - Processing & imaging keeps up with observations
  - Production of HBA catalog and QC phase
  - Release of HBA catalog projected late 2013
- Resume MSSS-LBA observations
  - Ionospheric situation needs additional effort
  - Release of LBA catalog likely 2014
- As (computing) time allows, re-processing and imaging to allow higher angular resolution survey products
  - (recall LSM talk by John McKean on 17 Apr 2013)